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ABSTRACT

Editing for clarity is essential in document design, but research suggests that even when used by skilled editors, the standard editing procedures are often limited in their effectiveness. Three experiments were conducted to explore the process of skilled editing in order to understand why it often fails and to determine what can be done to make it more effective. In the first experiment, 24 adults read four documents that had been revised for clarity using standard editing techniques. After reading each document, the subjects completed comprehension tests. The results showed that while three of the documents had been improved by revision, the fourth appeared to have been made worse. In the second experiment, protocols of subjects reading the fourth document were collected in order to pinpoint comprehension difficulties. The document was then revised to reduce the difficulties and administered to 12 new subjects. Comprehension tests from this third experiment revealed that the error rate on the revised version of the document had dropped dramatically. The findings of the experiments suggest that standard editing techniques, even when used by skilled editors, sometimes fail to improve clarity and that reading protocols can provide a powerful editing tool when standard editing techniques fail. (FL)

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EDITING FOR COMPREHENSION: IMPROVING THE PROCESS THROUGH READING PROTOCOLS

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ABOUT THE DOCUMENT DESIGN PROJECT

In September 1978, the American Institutes for Research, Carnegie-Mellon University and Siegel & Gale, Inc., began the Document Design Project to foster clear and simple writing and design of public documents. The purpose of the Document Design Project is to help make forms, regulations, brochures, and other written materials easier for people to read, to understand, and to use. Funding for the project comes from the Teaching and Learning/Reading and Language group at the National Institute of Education.

The Project's goal is to increase the knowledge and skills of people who produce public documents. To accomplish this goal, the Document Design Project is

- conducting theoretical and applied research studies on language comprehension, on the ways in which skilled and unskilled writers work, and on problems associated with different document features;
- working directly with government and private agencies as they produce materials for public use;
- developing courses on writing and design for graduate students and undergraduates.

This report is one of a series of technical and explanatory papers resulting from our research.

If you have questions or comments on this report or on other work of the Document Design Project, contact Dr. Janice C. Redish, Director, The Document Design Project, AIR, (202) 342-5071, or Dr. John R. Hayes, Department of Psychology, CMU, (412) 578-2781.

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EDITING FOR COMPREHENSION:
IMPROVING THE PROCESS THROUGH READING PROTOCOLS[1]

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Abstract

This series of experiments demonstrates that 1) standard editing techniques, even when applied by skilled document designers, sometimes fail to improve the clarity of a document, and 2) reading protocols provide a powerful editing tool which can yield improvement in clarity where standard techniques fail.

In the first experiment, four documents were revised for clarity, using standard editing techniques. Comprehension tests revealed that while three of the documents were improved by revision, the fourth appeared to have been made worse. In the second study, protocols of subjects reading the fourth document were collected to pinpoint comprehension difficulties. The document was then revised to reduce these difficulties. Comprehension tests revealed that the error rate for the final revision had dropped dramatically.

Editing for clarity is of central importance in document design. However, the literature suggests that even in skilled hands, standard editing procedures[2] are limited in their effectiveness. Skilled editing often improves clarity, but in a disturbing minority of cases, it fails to do so, and sometimes even makes things worse.

The purpose of this study is to explore the process of skilled editing, in order to understand why it may fail and what can be done to make it more effective.

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[1]Paper presented at the annual meeting of the American Educational Research Association, Session 15.27, "Making Public Documents Understandable: Research on Problems and Solutions," Los Angeles, April 1981.

[2]By standard editing procedures we mean the use of editing guidelines, such as those provided by Strunk and White, together with the editor's intuition about what will be clear and acceptable to the reader, to produce a more intelligible text.

OTHER RESEARCH

Most of the experiments on comprehension have been at the sentence level, but clearly it is also important that experiments be done using whole texts. Sentences are rarely used in isolation; all the parts of a text must work together. In studies using whole documents, revisions which were designed to improve comprehensibility often led to less than satisfactory results.

In some cases a revision resulted in better overall comprehension, but less comprehension on particular items. Charrow, Holland, Peck, and Shelton (1980), in a study of a revised Medicaid Recertification form, found that although people generally understood the revised form better, they still found it difficult and on a few items they actually performed worse with the revision. Jeffrey Davis (1977) of the New York University Law School tested a revised consumer credit contract on 148 adults, asking them 15 multiple-choice questions. Overall, the revision showed an improvement of 26%. Those who benefited most from having the revision were young, had a low income, or were inexperienced with credit. But, again, on some questions more errors were made with the revised contract than with the original.

Sometimes revisions improved comprehension, but only for selected groups of users. For example, in Davis's study mentioned above, the group that one would expect to have the most trouble with the document benefited most from the revision. However, this was not the case in a study by Kincaid, Kincaid, and Lewis (1977). They tested a revised installment loan form on two groups of subjects. One group was composed of college students who had been judged to be average readers, and the other group was night college students who were judged to be above-average readers. About 70% of those in the latter group were considerably older than those in the first group, and nearly half had had at least one installment loan. Kincaid et al. used the cloze test to measure comprehension[3]. The above-average readers showed a significantly better performance with the revision. The average readers did not show a significant improvement; in fact their scores on both

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[3] In the cloze test, words are deleted--usually every 5th word--and the subject is asked to supply the missing words.

versions were below the minimum score that Kincaid et al. believed was necessary to indicate comprehension.

Despite these mixed findings, the revisions in the studies cited did result in an overall improvement in understanding, at least for some people.

EXPERIMENT 1 - REVISING FOUR DOCUMENTS

In Experiment 1 four documents were revised using standard editing techniques. Then both the originals and the revisions were tested on people chosen from the general public. Our goal was to determine if the revisions improved comprehension.

The editing was done jointly by four document design experts, each with considerable experience in writing and editing. They were very aware of the difficulty people often have in understanding documents and were familiar with various strategies for overcoming these difficulties.

Each document was edited individually by each of the designers, and then reviewed in a joint session in which a composite revision was written. After each editor had individually reviewed the composite, the group met again to work out a final joint draft. Over 100 hours were devoted to the revision of the four documents[4].

The Documents

Four documents were revised in this study: a guarantee, an explanation of Workers' Compensation benefits from an employee handbook, a consent to surgery form, and the first page of a car insurance policy. All the documents were one page long. Their main function was to give information to the user, rather than to gather information from the user. They were documents that the user would have available to refer to later; in fact ordinarily the document might not be read until it was needed. Therefore it was important that the

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[4] Later, for comparison we asked two other expert editors (English teachers at the university) to revise the car insurance policy. Their revisions were similar to the first ones our designers produced.

information be presented in a way that could be easily accessed and understood but not necessarily remembered.

The original documents and the revisions are shown in Appendix A. Fictitious company names have been inserted on the originals.

The original guarantee and the explanation of Workers' Compensation benefits were documents that people familiar with our project had called to our attention as needing improvement. The original consent to surgery form is typical of those being used by Pittsburgh area hospitals. (The revised consent to surgery form was the result of a project we conducted with the assistance of lawyers who represent several area hospitals [Janik, Swaney, Bond, & Hayes, 1981].)

We included an insurance policy because of the legislation that exists on the readability of insurance policies. According to a 1979 survey only three states had passed laws or regulations on the readability of consumer contracts, but twenty-five states had made such laws or regulations on insurance policies and six others were considering such legislation (Pressman, 1979). The original car insurance policy is that of a reputable company and is similar to many policies in current use. It contains complex language, extremely long sentences, tiny print, and too many type faces.

The Revisions

Many of the changes which our designers recommended may be characterized as applications of standard editing principles. These included:

1. Breaking long sentences into shorter ones (On the car insurance policy, the average sentence length went from 42.5 words to 22.1);
2. Deleting unusual or unnecessary words such as "therein," "accrues," "hereunder," and "deems" or replacing them with common words;
3. Breaking the material into meaningful sections with descriptive headings;
4. Putting long conditionals into list format;
5. Deleting unnecessary information;

6. Replacing vague language with concrete language and examples;

7. Modifying the graphic design by using a size of type which can be easily read and by using white space and indentation to reinforce the organization.

Other changes which the designers recommended, especially changes in organization, are harder to characterize as applications of standard editing principles. Rather, they appear to reflect problem solving stimulated by the peculiar demands of the topic and the audience. For example, information in the hospital consent form was reorganized into four separate sections to highlight the patients' options.

The Subjects

Since the users of the documents revised in this study would be people from the general public who, mostly, are out of school and are working, we recruited our subjects from among adult acquaintances and at neighborhood laundromats. Laundromat customers are more representative of the population as a whole than college students are, and they had time to devote to our experiment without being inconvenienced. We felt that the advantage of using appropriate subjects outweighed the disadvantages of the testing situation (noise and lack of privacy).

The subjects were paid $3 for completing the experiment, which took approximately half an hour. In all, 12 men and 12 women, ranging in age from 19 to 69 (median age 31), took part. The median age of the U.S. population is 29.7. Our subjects' education ranged from 12 to 17 years or more, with a median of 14 years. The median schooling of the U.S. population which is 25 years and older is 11.7 years (for the population 14 years and older, the median is 12.4 years). As a group our subjects were very close in age to the population as a whole, but had a little more formal education.

The Procedure

Each subject received each of the four documents. The documents were randomly assigned to subjects, but distribution was planned so

that each subject received two originals and two revisions. With each document we gave the subjects a page of text which described a situation to which the document was relevant (for example, "You purchased a tool from a door-to-door salesman on August 25 ..."). In addition, the subjects were presented a list of six written questions. In order to answer these questions the subject had to apply the information in the document to the situation described. We chose the situations and the questions in an effort to approximate actual situations in which such documents might be used.

We also recorded whether subjects had ever had experience with similar documents by asking them four questions at the end of the experiment (for example, "Have you ever collected Workers' Compensation benefits?").

Subjects were permitted to read the materials in any order, and they were permitted to refer to the document as they answered the questions. They were timed from the moment they were given the document until they completed answering the six questions, but they were told that accuracy was more important than speed and that they could take as long as they wished.

Results

Figure 1 shows the results of the experiment. For all four documents there was no significant difference in performance among subjects due to age, sex, education, or prior experience with similar documents.

On the average, subjects took less time to read the revisions of Documents #1 and #4 than to read the originals. For Documents #2 and #3, reading time was about the same for original and revision.

On the first three documents people using the revisions were able to answer more of the questions correctly (although the difference was significant only for Documents #1 and #2). On the fourth document, the revision actually had a higher error rate (50% versus 40%), although this difference was not significant. The number of errors made with each document is shown in Figure 1.

Note in Figure 1 that only Document #1 (a guarantee) showed a significant improvement in both error rate and time on the revision.

	TOTAL ERRORS*			TOTAL TIME		
Document	Original	Revision	Significance by Mann-Whitney U Tests	Original	Revision	Significance by Mann-Whitney U Tests
#1	33	9	P < .01	51' 3"	30' 15"	P < .002
#2	32	19	P < .05 by 1 tailed test	85' 3"	86' 22"	Not Significant
#3	14	8	Not Significant	53' 59"	54' 46"	Not Significant
#4	29	36	Not Significant	104' 17"	79' 2"	P < .10

*For each original and each revision the total number of answers was 72 (12 subjects x 6 questions).

Figure 1: Results of Experiment 1

The document for which the revision yielded more errors than the original was the car insurance policy. Figure 2 shows the questions we asked our subjects about the policy and the correct answers. At the bottom are the subjects' incorrect answers. On five of the questions the number of errors was nearly equal on the original and revision. Question D accounted for most of the additional errors on the revision. No one who received the original missed Question D, but five people with the revision missed it. On the original the statement which provided the answer to the question read, "reasonable expenses ... not to exceed $50 per day." The revision read, "up to $50 per day for reasonable expenses ..." (The wording had been changed in order to have parallelism, so that each item in the list would begin with an amount of money.) Everyone who missed the question overstated the amount.

Many of the missed questions involved math. Although the operations required were very simple, many people find it hard to apply information given in prose to solving math problems. In studying the wrong answers and looking at the sheets on which the subjects did the math, we found that the wrong answers were not a result of calculating mistakes. Rather, the subjects often were not able to determine what amount or operation to use.

However, the fact that math was involved did not fully explain why the revision was not effective. Wrong answers indicated that the subjects were not comprehending basic facts which the policy should have made clear.

EXPERIMENT 2: READING PROTOCOLS

At this point we had a document to which all of the standard editing techniques had been applied and on which the readability score had been lowered, yet the revision was not any easier for people to understand. We needed a technique which would pinpoint the reasons for the difficulties. We judged that reading protocols as applied by Flower, Hayes, and Swarts (1980) were most likely to yield the information we needed.

4. You were in a very serious car accident which was covered by your car insurance policy with Vista Insurance. Under your policy you had purchased Limits of Liability of $100,000 for bodily injuries and $50,000 for property damages (these are the maximum amounts that will be paid for any one accident). You read the policy to find out how much of the settlements and your expenses will be paid by Vista. Shown after the following page is the part of your policy that gives this information.

A. One of the people injured in the accident is suing you for $100,000 for bodily injuries. Vista decides to settle out of court and pay the injured party $75,000, but you prefer to fight the lawsuit in court. Can Vista settle out of court without your permission? yes ✓ no___ can't tell___

B. The first lawsuit was settled out of court for $75,000. Then a second person injured in the same accident sues you for bodily injuries. He wins his case in court. You are held responsible for paying him $90,000 plus his costs of $10,000 for an attorney. How much of this $100,000 will Vista pay on your behalf? $35,000

C. Will the fees for the attorney hired by Vista to handle these two cases be paid by Vista? yes ✓ no___ can't tell___

D. During the above lawsuit, Vista asks you to be present in court each day. You miss 10 days from your job as a salesman, where you would have earned $60 a day in salary plus about $40 a day in commissions. You spend $5 a day for gas to travel to the trial. How much will Vista reimburse you for these expenses? $500 (or $50 per day)

E. At the time of the accident you were arrested for reckless driving. Vista refused to obtain a bail bond for you, but said that if you were able to obtain one they would pay up to the maximum amount allowed for bail bond under your policy. You were successful in obtaining a bail bond, which cost $300. Later you were cleared of the charges, but your lawyer's fee was $400. How much is Vista obligated to pay to cover your bail bond and your lawyer's fee for this case? $350

F. In the situation described in E, did Vista violate their policy with you when they refused to arrange for a bail bond? yes___ no ✓ can't tell___

Incorrect answers received:

Original	Revision
A. can't tell (4); no	A. can't tell (4); no
B. 25,000(8); 100,000; all; blank(2)	B. 25,000(6); 90,000; 75,000; 50; all; blank
C. can't tell(2); no(2)	C. can't tell(3); blank
D. no errors	D. 650(3); 1050; 1550
E. 50(2); 100; 500(2); none	E. 700; 550; up to 550; 500; 300(2); 250; blank
F. yes(2)	F. yes(2); can't tell

Figure 2: Questions Asked About the Car Insurance Policy

The Subjects

As subjects for the protocols we used three men and nine women who had not taken part in Experiment 1. Their ages ranged from 20 to 34 (median 25-1/2), and their education ranged from 12 to 17+ (median 16). Nearly all of them had more formal education than the general population, yet as reported below, they had the same problems with the documents as the subjects in Experiment 1.

The Procedure

Subjects were given one of the versions (the original or the revision) of the car insurance policy. They were instructed to read the document aloud into a tape recorder, verbalizing their thought processes as they worked. (The experimenter answered no questions and made no comments during the experiment.)

After they had read through the document, the subjects were given the six questions that had been used in Experiment 1. They were instructed to answer the questions aloud, explaining where in the policy they were finding the information they needed.

We took three protocols of people reading the original document and two of people reading the first revision.

Subjects reading the original often pointed out problems which the designers had already dealt with in their revision—problems such as extremely long sentences. However, many of the problem areas in the original were still problem areas in the revision. The document design experts were given transcripts of the reading protocols, and they then produced a second revision. We then took four protocols of subjects reading the second revision. The protocols revealed a few areas that still needed improvement. Those areas were modified by our experts to produce a third and final version. Finally, we took three protocols of that revision; these protocols did not identify any new problems. The final revision is shown in Appendix B.

In this study we were interested only in determining whether reading protocols could be of value to editors. We did not study the analytical stage in which an expert editor reviews both the reader's

statement, "I don't know what that sentence means," and the structure or context of the offending sentence to decide which of many alternative fixes is the appropriate one to make. In future studies we will take editing protocols, as well as reading protocols, so that we can analyze how editors use the reading protocols and how they arrive at solutions for the readers' problems.

The final revision meets the legal requirement for readability of insurance policies sold in Pennsylvania, which is a minimum Flesch Reading Ease score of 40. A readability formula is a mathematical equation that is used to predict the relative difficulty a reader will have with a specific written text. All of the formulas that are in wide use are based on only two criteria—sentence length and word difficulty (measured by the number of syllables per word or by word frequency). Although many experts have pointed out the limitations of readability formulas (Redish, 1979; Huggins, 1977; Shuy & Larkin, 1978; among others), writers of insurance policies must check the readability of their work against the legal requirements in the states where those policies are sold. Of the twenty-five states that have laws or regulations on the readability of insurance policies, ten specify a minimum Flesch Reading Ease score as their criterion (Pressman, 1979).

Findings

We learned from the reading protocols that the results of our first experiment were not misleading—people do have real trouble understanding insurance policies.

In earlier studies (Bond, Hayes, & Flower, 1980; Flower, Hayes, & Swarts, 1980) it was found that when people read a difficult text they exercise a number of strategies for trying to understand that text. Likewise, in the protocols collected for this study, we often saw subjects using or trying to use various comprehension strategies. Sometimes the subjects were successful; sometimes not. When they were successful, they gave us valuable ideas about how to make that area clearer to others. When their strategies failed to lead them to an understanding or even led them to a misunderstanding, they showed us areas that crucially needed to be revised.

Instantiation. In the study mentioned above, Flower et al. found

that readers attempt to build scenarios, that is, to organize information around human agents and their actions. They also found that readers attempt, to varying degrees, to instantiate those scenarios, that is, to provide the context and concrete instances that make a general rule more understandable. Readers (and writers) can instantiate a scenario by providing extended examples or cases, by interpolating short examples into the prose, or by using details and specifics to define the meaning of a term. Following are some examples of strategies our subjects used:

a) organizing information around human agents and their actions:

S1: For this part I get out of it, ah, me being the subscriber, Vista is going to cover me and sort of act as my attorney if there should be any type of claim.
S3: I guess what they're saying is they would follow through on any lawsuits to, I guess, to make sure that they are substantial and that they're supported by evidence.

b) providing extended examples or cases:

S1: But even if, let's say, the damage isn't as great as the coverage you have and something comes up later on, like say, ok, for property damage, say you hit somebody's wall and they found out later on that, you know, it cracked a sewer line or an underground telephone cable ...
S8: That property damages would be like — the person's car or whatever you hit or whatever. — That $100,000 would be for hospital bills and stuff, I guess. The $50,000 would be for the other guy's car or whatever you hit. Oh, that would probably be for lost wages, too, in there someplace.

c) interpolating short examples into the prose:

S7: Collision must be when your car hits something. I suppose if something like a tree fell on your car, that would be what that was [accident not involving a collision].
S8: That must mean a person's regular insurance — like Blue Cross, I suppose, hospitalization.

d) using details and specifics to define the meaning of a term:

S3: [Limit of Liability] I assume the Limit of Liability is the amount you're insured for, although it doesn't say that here at all.
S8: [lawyer fees] That would be to decide whose fault it was.

Flower et al. argue that instantiation is an important technique which should be utilized by editors and writers. In another study which concentrated on the effect of examples, it was shown that examples inserted in text increase comprehension, even though as a result the revised document is longer than the original (Pollchik, 1975).

Examples and other types of instantiation not only clarify difficult prose and make the general more concrete, but they may also help to solve another problem present in many complex documents—information density. Subjects both in Experiment 1 and in our protocols often commented on the large amount of information to be grasped even though the document (the original as well as our first revision) was only one page long.

Kintsch and Vipond (1978) have said that the difficulty of a text is affected by the propositional density and the number of new concepts per proposition. In a short span of time people can grasp only a certain number of ideas. When more words are used to express an idea, the ratio of ideas to time becomes lower and thus more favorable and results in faster reading and improved recall (Wright, 1968; Frase & Fisher, 1976). Examples give the reader more information-processing time.

In the final revision, the designers provided four extended examples (which were set apart in boxes); six short examples interpolated into the text; and seven instances of details and specifics to define the meaning of a term.

Subjects often commented that they liked having examples and that the examples in the second and third revision were clear. One subject commented:

S9: ... and I like the fact that they cook up the examples in

such a wa as to show you in a way that's not always flattering to Vista. In other words they show you exactly what your costs, uh, responsibilities are, through their examples. They could have made the examples much more dishonest, to look like Vista would pay in every contingency.

Context. Readers bring their prior knowledge of the material and their knowledge of schemas to most reading tasks. Certainly most people have some knowledge about car insurance. Prior knowledge can be extremely valuable. Serious investigations of the effect of the reader's knowledge base are just beginning, but there is some data to support the claim that the more one knows about a topic, the easier one can learn new things about it (Kintsch & Vipond, 1978, p. 32).

Lack of relevant knowledge can cause problems for readers, as can prior knowledge that is fuzzy or applied incorrectly. For example, the portion of the insurance policy we used dealt only with liability insurance, but we found that most people didn't understand the differences between various types of car insurances, usually all covered in one policy.

Although subjects understood from the document that liability insurance pays for injuries and damages to the other party only, they often questioned why their own injuries and damages weren't mentioned. This misunderstanding did not affect the error rate in Experiment 1 because the hypothetical situation and questions did not deal with the policyholder's injuries and damages, but it would cause problems in real life. (An advantage of doing reading protocols is finding areas of misunderstanding which would not be covered by questions, either because the number of questions must be limited or because the person making up the questions doesn't realize that there could be a misunderstanding on that particular point.)

Subjects often brought up topics such as deductibles (which do not apply to liability insurance), no-fault insurance (mandatory insurance required in Pennsylvania and some other states), and time limits. None of these were mentioned in the section of the document that the subjects were reading.

People often think they have heard or read what they expected to. In Davis's study (1977) mentioned earlier, many people couldn't believe that they would be in default on a consumer credit contract if they

damaged the goods, even though they kept up the payments. Readers know from experience that most creditors do not care whether or not goods bought on credit have been damaged as long as they are paid for, so it is difficult for them to realize that they would be in default.

Of course, it is impossible to prevent all of the possible misunderstandings which readers might have. However, by being aware of problems which trouble readers frequently, an editor can help to solve those problems.

Inferencing. There was evidence in the protocols of readers making inferences. Examples of correct inferences are:

> S2: It sounds as if that means in fact in doing their own investigation, if it seems more beneficial to them to pay, or more expedient, they'll do that. It's up to them cause they're the ones covering all settlements.
> S7: I suppose someone reading this policy would know how much they should have, that the salesman would explain that to them.

But what was more revealing were wrong inferences or inferences that subjects failed to make (which showed up when they answered the questions). Examples of wrong inferences are:

> S2: It sounds like they'll pay the total amount of the bond, um, but only $50 of the lawyer's fee.
> S8: "Interest on unpaid settlements — for which Vista" — it must mean money those people aren't using.

Among the inferences which subjects often missed were:

- that the phrase "shall defend any suit" means hiring and paying for lawyers;
- that the statement "and may make such investigation and settlement of any claim or suit as it deems expedient" means that the company can settle out of court without the policyholder's permission (our Question A).

Failing to make inferences is in part a reading problem that a document can't always solve. But if the inference is crucial and if

there is evidence that many readers are failing to see it, the writer should be more explicit. This was done in the final revision.

Attention Management. Readers sometimes remind themselves to summarize or to reread something that's not clear to them. Some examples are:

> S4: The Limits of Liability is the only thing [I don't understand]. I should probably go over it one more time.
> S9: I'm going to go back up here and get my bearings.
> S6: I'd have to reread that to get it all.
> S9: Ok, I think I've read enough to understand, um, the form of that.
> S3: Um, boy, I really have to sift through this paragraph to figure out what's going on. ... I myself am really reluctant to sift through it at all, it's really (laugh) dull, that part of it. [In this example the subject realized what she needed to do, although she didn't follow through.]

A reading error which often surfaced, and which was crucial to understanding a whole section, was understanding the relationship between Limits of Liability and Supplementary Payments. All of the versions, including the original, stated that payment for the items listed under Supplementary Payments (such as lawyer fees, bail bonds, etc.) would not be deducted from the Limits of Liability (the amount of insurance purchased to cover the other party's bodily injuries and property damages); however, once the Limits of Liability have been paid in full, no more Supplementary Payments will be made to cover the costs involved in lawsuits.

We found that subjects usually read the one-line explanation at the beginning of the Supplementary Payments section quickly without dwelling on it. On the original the line said, "To pay, in addition to the applicable Limits of Liability:". The first revision said, "In addition to the Limits of Liability, Vista agrees to pay:". One subject, who made a mistake but later realized it, summed up her problem:

> S1: Hmmm, in rereading this, I see that the lawyer fee wouldn't come out of the Limits of Liability because it says these are in addition to the applicable Limits of Liability. It's

tough the first time you read a document to get everything out of it and to think of every question you're going to have about it, unless you've thought about it and read through policies before and already have written down questions ...

Others were confused by the fact that although Limits of Liability and Supplementary Payments are two different things, there is a relationship between them. Sometimes, as shown below, they realized their confusion:

S9: Why is Vista going to pay all of the expenses of the lawsuit, just because the Limits have not been exhausted? I mean there's some kind of connection between the Limits of Liability, and, uh, paying the expenses of the lawsuit ... But it's not, I wish they would have made that relationship a little more clearer.

As with inferences, the writer can't solve all of the readers' problems. However, where there is evidence of many people making the same mistake, an editor should try to correct the problem. The one-line explanation at the beginning of the section clearly was insufficient. In the final revision the designers repeated the distinction at several points, made the distinction clear in examples in each section, and specifically cautioned people to keep it in mind.

Dealing with Lexical Problems. The following comments are examples of subjects attempting to deal with lexical problems, that is, problems with words and vocabulary:

S7: I guess I don't know what an immediate family member is exactly ... Is it my grandmother?
S7: I don't know what a premium is, but I suspect most people would, I guess.
S7: I don't have any idea what appeal bonds and, uh, other bonds are.
S6: I don't know what they mean by "been exhausted."

The wrong answers we received to the questions we asked pointed up another lexical problem. Quite a few subjects thought that if the

policy paid "up to $500" for a certain item, the policyholder would get reimbursed $500 even if the item cost less. The same mistake was made occasionally when the document said, "not to exceed $500." Also, in dealing with a paragraph which mentioned two such categories, subjects often did not keep the two amounts separate; in answering the question, they totaled the two amounts actually spent and then checked to see if the total was under the total of the two maximums allowed.

Many of the lexical problems on the original had already been dealt with by the designers on the first revision. In the longer second revision, some new terms were introduced without adequate definition. The final version contained no undefined terms which gave subjects trouble. The "up to $—" problem was solved by explicitly stating what would be paid if the amount went over the maximum and if the amount were under the maximum, and by giving examples of both conditions.

Use of Structure. Subjects occasionally commented on structure (the organization, the headings, etc.). For example:

> S3: It's a relief to see this smaller paragraph.
> S1: The only thing is under Part 1 they tell you to "See Part VI for definition of words in bold type." ... I think defining them as they come up is a better bet.
> S4: [about the first revision] It emphasizes all the points. It goes pretty well in order. It tells you your limits in the beginning and then all the other factors.
> S6: I thought it makes it a little easier to understand in the beginning, how it's broken down into — oh — a little summary of the different points.

The first revision had solved the structural problems of the original, and most comments on structure in the revisions were favorable. The one negative feature subjects pointed out was frequent references to other sections. Some subjects found this distracting. Although reorganization eliminated a few of these references, the designers decided to keep the rest because in real life a policy is rarely read from cover to cover; instead people look up applicable sections. Therefore we felt it was necessary to refer the reader to any other section that gave information related directly to the section being read.

Overall, it is interesting to note that in their first revision, our

designers dealt primarily with lexical and structural problems. In general, though, they did not discover the difficulties which the subjects were having with instantiation, context, inferencing, and attention management, until they examined the reading protocols.

EXPERIMENT 3: REPEAT OF WRITTEN TEST

Based on reading protocols, we felt that the third revision would be clear to most people. We then repeated the written test on the insurance policy given in Experiment 1.

We recruited 12 new subjects (6 women and 6 men) from among acquaintances and at neighborhood laundromats. Their age range was 20 to 56, with a median of 25. Their years of formal education ranged from 12 to 18, with a median of 13-1/2.

As shown in Figure 3, the error rate was significantly lower than with the original document used in Experiment 1. In Experiment 1 the original had a 40% error rate and the revision 50%. In this experiment the revision had an error rate of 22%.

The average time it took subjects to read the document and answer the questions increased, but not in proportion to the increase in the document's length. The final revision contained nearly four times as many words as the original, but it only took subjects an average of two and one-half times as long to read the revision as it had the original.

Although the increased length may seem alarming at first glance, there are three mitigating facts:

- As mentioned above, the amount of time it took subjects to read the document and look up facts did not increase in proportion to the increase in length;
- Subjects did not complain about reading the final revision, whereas the subjects who received the original in Experiment 1 and in the protocols made many negative comments;
- An insurance policy is a reference document which typically is not read cover to cover. Instead people read only those sections which contain the information they need in a particular instance.

It can be argued that, because we gave the protocol subjects the same questions we gave to the subjects in Experiments 1 and 3, the

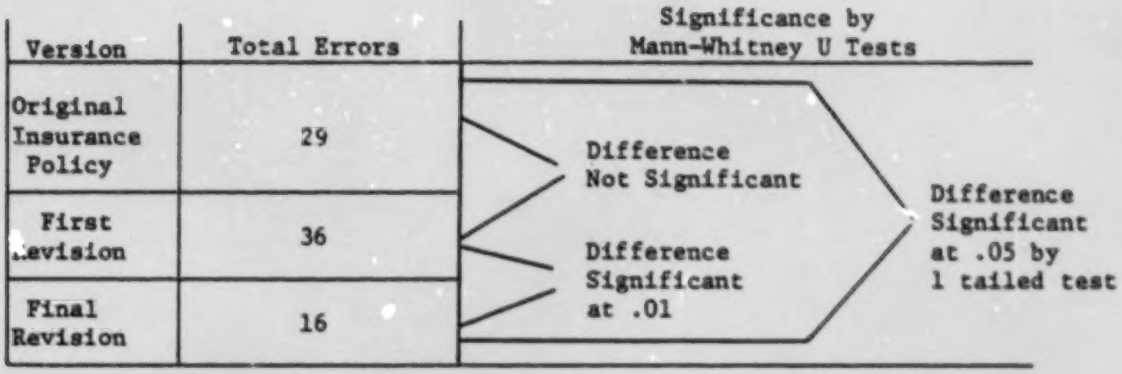

Figure 3: Results of Experiment 3

increased comprehension shown in Experiment 3 was due to our document design experts making editing changes to fit the questions. However, we believe that the entire content is much clearer in the final revision than in the original document and that similar results would have been obtained if different questions had been used in the protocols. Our document design experts tried to resolve all of the problems evidenced by readers, whether or not that particular area was covered by the questions (and many weren't); the fact that readers had no major problems with the final revision indicates that our experts were successful. While the protocols from this study suggest that it is very useful to have reading protocol subjects answer questions, in future studies we will use a different set of questions (unseen by the editors) to test for comprehension.

FUTURE RESEARCH

We believe that reading protocols have already shown themselves to be a very valuable editing tool. However, as an aid in applying protocols in practical situations, it would be useful to have answers to the following questions:

1. How many protocols are necessary to revise a document adequately? Protocols are time-consuming to collect and transcribe, and therefore expensive. However, because protocols can reveal detailed and valuable information about how users deal with a document, it may not be necessary to spend additional time and money on other types of evaluation. (In any event it should be remembered that the expense of protocols and other tests may be minor compared to the cost of errors made hundreds or thousands of times due to a poor document in wide use.)

2. How can questions best be used with protocols? In our experiment we asked the subjects to answer questions as part of the protocol (after they had given a reading protocol of the document itself). The answers were very valuable in bringing to light misunderstandings which the subjects were not aware of as they read.

3. Will all editors benefit from collecting protocols? Certainly protocols can increase an editor's awareness of readers' problems. But

although subjects occasionally offer valuable suggestions on how to change the document, largely it is up to the editor to solve the problems the protocols point out. As we mentioned earlier, we need to know how editors move from awareness of a problem to its solution.

4. Can protocols be used in training editors? If so, will the training apply only in editing subject matter similar to that covered in the protocols, or will it generalize to other types of material?

Our future research with both reading and editing protocols will attempt to answer these questions.

CONCLUSION

Our experiment demonstrates two significant things for document designers. The first is the need to test a document on people who are typical of real users. Although editors who are familiar with clear writing guidelines can make a great improvement on many documents, it is very dangerous to rely solely on guidelines, readability formulas, and intuition. It is not necessarily easy for editors, who of course are familiar with their subject matter, to judge what other people may understand or misunderstand; therefore it is crucial that the editor go one step further and test the revision on members of the intended audience. If problems are found and a new revision is drawn up, then that revision should be tested also. The solution which an editor believes will work may not always accomplish its objective.

The second thing shown in our study is the benefit of using reading protocols as an editing tool. The use of reading protocols to improve documents makes good sense. It removes the editor and experimenter from the situation and lets the reader deal directly with the document. Any trouble spots that exist are likely to be caught, rather than just those items an experimenter happens to ask questions about. Our subjects gave us important information about the problems they had with the document and with the subject matter generally. Based on their comments our designers were able to produce a revision which we believe people will be willing to read and which they can understand.

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Appendix A

Documents Used in Experiment 1

Readability: Flesch - 35.201 difficult (academic journals)
Recalculated Flesch formula - Grade 16.7
Fog Index - Grade 18.5
Average sentence length: 33.5 words

R & D Sales
915 Spencer Avenue
Pittsburgh, PA 15227
412/884-2879

GUARANTEE

8-25-80
Date

If you are not satisfied with the material for any reason, you may return it without any penalty or obligation, within thirty days from the above date.

If you wish to return the material, notify the Seller by telephone or mail a signed and dated copy of this guarantee or any other written notice, or send a telegram, not later than midnight of 9-24-80. You must make the material available to the Seller at your residence; or you may if you wish return the goods at the Seller's expense and risk.

If you return the material, you may choose to receive a refund or, at the Seller's discretion, a replacement. If you choose a refund, any property traded in, any payments made by you under the contract or sale, and any negotiable instrument executed by you will be returned within 10 business days following receipt by the Seller of the returned material, and any security arising out of the transaction will be cancelled.

If you do not agree to return the goods to the Seller or if the Seller does not pick them up within 20 days of notification, you may retain or dispose of the goods without any further obligation.

I wish to return the material purchased under this transaction.

Date

Buyer's Signature

I hereby acknowledge receipt of two (2) completely filled in copies of the above guarantee.

Myron Bernstein
Customer's Signature

9-25-80
Date

Original of Document #131

Readability: Flesch - 60.53 fairly difficult (quality magazines)
Recalculated Flesch formula - Grade 9.0
Fog Index - Grade 12.0
Average sentence length: 16.9 words

R & D SALES
915 Spencer Avenue
Pittsburgh, PA 15227
412/884-2879

GUARANTEE

Terms of the Guarantee

1. We guarantee the material listed below for a period of thirty days from the date of sale.

2. If the material breaks or if you are not satisfied with it for any reason, you may return it to us for a full refund or replacement.

   a. If you desire a replacement, we will try to provide it if possible. However, if a replacement is not available, we reserve the right to refund your money.

   b. If you desire a refund, we will always provide it.

3. If the material is broken due to misuse or vandalism, this guarantee does not apply.

How to Return the Material

You may return the defective material in either of the following ways:

1) Send the material parcel post collect, postmarked no later than 30 days from the date of sale. Include a note asking for either a refund or a replacement.

2) If you prefer that we pick up the material, notify us by telephone within 30 days from the date of sale to arrange a time when we may pick up the material.

Material 1 rivet gun # A 520

Date of Sale 8-25-80

Mirth Bernstein
Customer's Signature

Charles Leant
Salesman's Signature

Readability: Flesch - 20.928 very difficult (scientific journals)
Recalculated Flesch formula - Grade 15.2
Fog Index - Grade 17.1
Average sentence length: 19.9 words

WORKERS' COMPENSATION

The Pennsylvania Workers' Compensation Law provides compensatory payments to employees for disabilities that are related to employment. The law defines benefits which are intended to cover most of the employee's resulting economic loss, to provide income benefits to survivors, and to cover medical expenses. The law also requires Pennsylvania employers to have insurance (or be self insured) for these liabilities. Therefore, Fitch Manufacturing provides benefits for injuries or disease resulting from work at Fitch Manufacturing under a workers' compensation and employer's liability policy with the Pennsylvania Manufacturers Association Insurance Company.

Workers' Compensation benefits are of two kinds: 1) cash benefits including income benefits for temporary or permanent disabilities, impairment benefits for partial (scheduled) disabilities, and 2) income benefits for survivors in cases of fatalities. There is a seven day waiting period for income benefits. However, if the disability lasts longer than fourteen days, income benefits are then paid retroactively to the date of the injury. The income benefit in Pennsylvania is set at 66-2/3 percent of the disabled employee's wages. The law also designates minimum and maximum weekly payments based on the claimant statewide average weekly wage (the current minimum is $66 per full week and the maximum is $242 per full week). Medical benefits are not limited in any way by Pennsylvania law for a work related injury or occupational disease; medical benefits begin immediately.

The Pennsylvania law also establishes a time limit within which injuries or occupational diseases must be reported to an employer. Under this provision, compensation will be paid based on the date of the injury only if the injury is reported to Fitch Manufacturing within 21 days of its occurrence. After 21 days, compensation will begin based on when the report is made. The law bars compensation for any injury or disease reported more than 120 days after the occurrence, and it bars all claims in three years after the injury, death, or last compensation payment. It is important, therefore, to be sure that the reporting requirements described in the section on safety policy are observed in the event of any work-related injury or illness.

Fitch Manufacturing bears the full cost of this benefit.

Readability: Flesch 59.21 fairly difficult (quality magazines)
Recalculated Flesch Formula - Grade 10.4
Fog Index - Grade 12.8
Average sentence length: 21.6 words

COMPENSATION FOR JOB-RELATED DISABILITIES

Types of Payments

If you are disabled by injury or illness caused by your job, Fitch Manufacturing will pay Workers' Compensation benefits as follows:

- All related medical expenses
- Income as follows:

  If you are off work one week or less, you will receive no payment;

  If you are off work more than one week but less than three weeks, you will be paid a portion of your wage for the total number of days missed minus the first five days;

  If you are off work three or more weeks, you will be paid a portion of your wage for all of the days of work missed.

  The portion which you will receive is 2/3's of your gross wage, except that you can receive no less than $66 per week and no more than $242 per week for each full week you qualify for compensation.*

- A monthly benefit or a lump sum settlement if the injury or illness results in partial or total permanent disability (even if you are able to return to work). Fitch Manufacturing will decide which method of payment (monthly benefit or lump sum) you will receive.
- Payments to your survivors if the injury or illness results in your death.

Deadline for Filing

In order to receive full compensation, a claim must be filed with your immediate supervisor within 21 days of the injury or illness. If a claim is filed between the 22nd and the 120th day, compensation will be based on the date the report was filed instead of the date of the injury or illness. Compensation will not be paid if a claim is filed more than 120 days after the injury or illness.

*For example, if your gross wage (wage before taxes) is $300 per week, 2/3's of your wage is $200. This amount is between $66 and $242, so this is the amount you would be paid for each full week of work you are eligible for benefits. If you are eligible for only 2 days, you would receive $80 ($200 per week ÷ 5 days = $40 per day; $40 x 2 days = $80).

Readability: Flesch - 29.73 very difficult (scientific journa
Recalculated Flesch formula - Grade 17.0
Fog Index - Grade 20.4
Average sentence length: 31.8 words

PATIENT: Janet Weaver

DATE: Jan. 10, 1981 TIME: 4:05 A.M. (P.M.)

CONSENT TO OPERATION OR OTHER MEDICAL PROCEDURE

I hereby acknowledge and understand that the nature of the procedures authorized by this form, the possible alternative methods of treatment, and risks involved or the probabilities of success or failure have been fully explained and disclosed to to me personally by Dr. Rita Barons .

1. I hereby authorize the performance upon myself (Myself or Name of Patient) of the following procedure
Opening the abdomen, removing the appendix, sewing closed the hole in the large intestine, sewing closed the incision in the abdomen; also any additional or other surgery that is found to be needed.
(Name or Description of Operation or Other Procedure to be Performed in the Language of Laymen)

2. I hereby authorize Dr. Rita Barons and/or such assistants, including resident physicians, as may be advisable or necessary, to remedy the condition or conditions which are indicated by the diagnostic studies already performed.

3. I have also been informed that there are other risks such as severe loss of blood, infection, cardiac arrest, etc. that are attendant to the performance of any surgical procedure. I acknowledge that no guarantees have been made to me concerning the results of the operation or procedure.

4. I, Dr. Rita Barons , affirm that I have personally communicated to the patient the information referred to above, have offered explanations to the best of my ability, have answered the questions raised by the patient and have explained the contents of this consent form to the patient who has signed it in my presence.

1-10-81
(Date)

Rita Barons M.D.
(Signature of Physician)

5. I, Janet Weaver , (Patient or Person Authorized to Consent for the Patient) attest to the fact that I have been given the opportunity for questions and answers regarding the condition(s) and procedure(s) outlined in this consent form and the contents thereof have been fully explained to me. The blanks appearing on this form have been completed or deleted prior to my signature.

Janet Weaver
(Signature of Patient or Person Authorized to Consent for Patient)

Witness
Lisa Estrada

Original of Document #3

Cat. No. 4163 Form No. 1380

Patient Signature to be Obtained by Physician

Janet Weaver
1552 Bird Drive
Pittsburgh, PA 15227

Patient's Name Janet Weaver

City Hospital
Consent to Surgery

Readability:
Flesch - 49.22 difficult
(academic journals)
Recalculated Flesch - Gr. 9.8
Fog Index - Grade 13.5
Average sentence: 14.1 words

Part 1
Planned Treatment
To be completed by the doctor, in common terms, before the patient signs this form.

1. Dr. Rita Barons has explained to me that:

a. I have the following condition: Appendicitis - inflammation and danger of rupture of a side portion of the large intestine

b. my condition needs to be treated because: If rupture occurs the abdomen would be flooded with intestinal contents. The resulting infection would probably be fatal.

2. I authorize Dr. Rita Barons to operate on me or to appoint another licensed physician to operate on me.

The operation to be performed on me is as follows:

Opening the abdomen, removing the appendix, sewing closed the hole in the large intestine, sewing closed the incision in the abdomen.

3. The doctor has explained that:

a. the following risks are involved in the operation:

If rupture has occurred, risk of infection of the abdominal cavity is very great.

b. all surgery involves risks such as severe loss of blood, infection, and heart stoppage;

c. the surgery will be done in a responsible manner by a licensed physician. No guarantee has been made that the surgery will improve my condition;

d. my condition could be treated in the following other ways which are not being used on me at this time:

Prolonged antibiotic treatment with IV feeding, in the hospital.

Part 2
Additional Surgery
To be completed by the patient.

My doctor has explained to me that sometimes during surgery it is discovered that additional or other surgery is needed. If I need additional or other surgery during my operation,

☑ I authorize the doctor to proceed.

☐ I do not authorize the doctor to proceed.

continued

Patient's Name Janet Weaver

Part 3
Disposition of Tissues
To be completed by the patient.

I request that anything removed from me:

☑ be disposed of by the hospital as usual, or

☐ other:

Part 4
Signatures
To be completed only after Parts 1, 2, and 3 are filled in.

- I declare that I have personally explained the nature of the patient's condition, the need for treatment, the operation to be performed, and the risks and alternatives listed in Parts 1, 2, and 3:

☑ to the patient.

☐ to the patient's closest relative or guardian:

Name

Address

Phone

I have given the patient or the person named above an opportunity to ask questions which I have answered as fully as possible.

Signature of Doctor Rita Sirma, M.D.

Signature of Witness Rosalyn Miller

Date Jan. 10, 1981 Time 4:05 am (pm)

- The doctor has explained all of the information in Parts 1, 2, and 3, to me and has answered my questions.
I understand that a copy of this completed form will be given to me after I sign it.

Signature of Patient Janet Weaver

Signature of Witness Rita Sirma

Date Jan. 10 1981 Time 4:05 am (pm)

- The patient is unable to consent for the following reason:

I therefore give consent on the patient's behalf.

Signature of Closest Relative or Legal Guardian

Relationship to Patient

Signature of Witness

Date Time am pm

37

FAMILY AUTOMOBILE POLICY

This Vista POLICY contains MORE THAN 31 XTRA PROTECTION FEATURES not found in the ordinary automobile policy. Wherever this X appears in the margin you receive XTRA PROTECTION AT NO ADDITIONAL COST. Some of the X's denote places where you would find exclusions of important coverage in the ordinary policy but not in YOUR VISTA POLICY.

To help you understand this policy, we have defined in Part VI certain key words that have a special meaning in this policy, rather than the ordinary dictionary meaning. These special words are printed in bolder type than the balance of the policy, as for example: "Insured."

● THE SUBSCRIBERS at VISTA INSURANCE CO., INC. severally, but not jointly, each ratably with other Subscribers, but not one for the other, and represented by VISTA INDEMNITY COMPANY, Attorney-in-Fact, AGREE with Subscriber, named in the Declarations made a part hereof, in consideration of the payment of the premium deposit and the execution of a power of attorney to VISTA INDEMNITY COMPANY, authorizing it to execute reciprocal or inter-insurance contracts between said Subscriber and other Subscribers at VISTA INSURANCE CO., INC. and in reliance upon the statements in the Declarations, and subject to all the terms of this policy:

PART I • AUTOMOBILE LIABILITY INSURANCE

(See Part VI for definition of words in bold type)

COVERAGE A—BODILY INJURY LIABILITY
COVERAGE B—PROPERTY DAMAGE LIABILITY X

TO PAY on behalf of the **insured** all sums which the **insured** shall become legally obligated to pay as damages because of **bodily injury** sustained by any person or **property damage** arising out of the ownership, maintenance or use of the **owned automobile** or any **non-owned automobile**, and Vista shall defend any suit alleging such **bodily injury** or **property damage** and seeking damages which are payable under the terms of this policy, even if any of the allegations of the suit are groundless, false or fraudulent, and may make such investigation and settlement of any claim or suit as it deems expedient, but Vista shall not be obligated to pay any claim or judgment or to defend any suit after the applicable limit of Vista's liability has been exhausted by payment of judgments or settlements.

SUPPLEMENTARY PAYMENTS

TO PAY, in addition to the applicable Limits of Liability:

(a) all expenses incurred by Vista, all costs taxed against the **insured** in any such suit and all interest on the entire amount of any judgment therein which accrues after entry of the judgment and before Vista has paid or tendered or deposited in court that part of the judgment which does not exceed the limit of Vista's liability thereon;

(b) reasonable expenses incurred by the **insured** at Vista's request, including actual loss of wages or salary (but not loss of other income) X not to exceed $50 per day because of his attendance at hearings or trials at such request;

(c) premiums on appeal bonds required in any such suit, premiums on bonds to release attachments for an amount not in excess of the applicable Limit of Liability of this policy, and the cost of bail bonds required of the **insured** because of accident or traffic law violation arising out of the use of an **automobile** insured hereunder, not to exceed X $500 per bail bond, but without any obligation to apply for or furnish any such bonds;

X (d) all reasonable attorneys' fees not to exceed a total of $50 in any one accident incurred by the **insured** in the event of his arrest as a result of an accident involving an **automobile** insured hereunder.

Readability:

Flesch - 18.242 very diff.- scientific journals

Recalculated Flesch formula Grade 21.3

Fog Index - Grade 23.4

Average sentence length: 42. word

Readability: Flesch - 38.630 difficult (academic journals)
Recalculated Flesch formula - Grade 13.4
Fog Index - Grade 17.2

Average sentence length: 22.1 words

VISTA INSURANCE CO., INC.

AUTOMOBILE POLICY

Limits of Liability

Vista agrees to pay for bodily injuries or property damages caused by an automobile accident for which you are held legally responsible and which involves a vehicle or driver insured under this policy. The section "Vehicles and Drivers Covered" explains which vehicles and drivers are covered under this policy. The maximum amounts that Vista will pay for injuries or damages occurring in one accident are the amounts of the Limits of Liability purchased under this policy ($ 100,000 for bodily injuries and $ 50,000 for property damages).

Lawsuits

Vista agrees to defend, at its cost, any lawsuit for bodily injuries or property damages which would be payable under this policy. Vista may make investigations and settle any claim or suit as it wishes. However, once Vista has paid out in judgments or settlements the amounts of the Limits of Liability, Vista is not obligated to defend any additional suit or to pay any further claims or judgments for bodily injuries or property damages.

Supplementary Payments

In addition to the Limits of Liability, Vista agrees to pay:

- all expenses incurred by Vista in connection with lawsuits that Vista agrees to defend;
- all court costs and attorney fees incurred by you in connection with lawsuits that Vista agrees to defend;
- up to $50 per day for reasonable expenses, including loss of wages or salary, incurred by you due to attendance at hearings or trials at Vista's request (income other than wages or salary, such as tips or commissions, will not be paid);
- up to $500 for a bail bond resulting from an accident or traffic law violation involving an automobile insured under this policy (however, while Vista agrees to pay for such bail bonds, Vista is not obligated to apply for or to furnish them);
- up to $50 in attorney's fees if you are arrested in connection with an accident involving an automobile insured under this policy.

Appendix B

Final Revision

of the

Car Insurance Policy

VISTA INSURANCE CO., INC.

FAMILY CAR INSURANCE POLICY
For Residents of Pennsylvania

Readability:
Flesch - 44.755 difficult (academic journals)
Recalculated Flesch formula - Grade 11.2
Fog Index - Grade 12.3
Average sentence length: 17.4 words

This policy provides you with several types of car insurance. A brief summary of what is covered by each type of insurance is listed below. Each type is explained more fully in the rest of the policy.

Throughout this policy, "you" refers to the policyholder and all relatives who live in the same household. "Vista" refers to Vista Insurance Co., Inc. "Other party" refers to anyone else.

This policy takes effect October 1, 1980 and will remain in effect until cancelled by the policyholder or Vista.

Summary of This Policy

Payments Made To	Type of Accident	Name of Insurance	Explained In	Pays For
Other Party; You (only for expenses of lawsuits or arrest)	Any accident which results in your being sued	Liability	Part I	- bodily injury, lost wages, and death to the other party; - damage to property belonging to the other party; - certain expenses due to lawsuits; - certain expenses due to your arrest.
You and drivers and occupants of your car	Accident in which all the cars are insured	Personal Injury Protection (often called "no-fault")	Part II	- bodily injury, lost wages, and death to you; - bodily injury and lost wages to anyone else driving or occupying your car.
You and drivers and occupants of your car	Accident in which the other car is uninsured, underinsured, or hit-and-run	Uninsured Motorists	Part III	- bodily injury, lost wages, and death to you; - bodily injury, lost wages, and death to anyone else driving or occupying your car; - damage to your property.
You	Any accident which results in damage to your car, whether or not another car is involved	Automobile Physical Damage, including: collision - comprehensive -	Part IV	- damages to your car and certain other expenses resulting from an impact with another car, an object, or a person; - damages to your car and certain other expenses resulting from an accident which does not involve a collision (for example, if a tree falls on your car).

Part I - LIABILITY INSURANCE

1. What does Liability Insurance cover?

Liability Insurance covers:

A) Limits of Liability - payments for bodily injuries and property damages suffered by the other party as a result of a car accident covered by this policy (explained in #2). The amounts of these payments are listed in #3.

The term "bodily injuries" means disabilities suffered by the other party. Payment will be made to cover the cost of the following items, up to the amount of the Limit of Liability:

- injury;
- sickness;
- disease;
- death;
- loss of income due to any of the above.

The term "property damages" means harm to anything belonging to the other party (a car, motorcycle, house, tools, or any other object). Payment will be made to cover the following costs, up to the amount of the Limit of Liability:

- partial or total destruction;
- loss of use of the property (for example, cost of a rental car if the other party's car cannot be driven).

B) Supplementary Payments - payments for certain expenses connected with lawsuits brought against you, as well as certain expenses connected with your arrest due to an accident or traffic violation. The amounts of these payments are listed in #6 A, B, and C.

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2. What accidents are covered?

Liability Insurance covers any accident that meets both of the following conditions:

A) the accident involves either a driver or a car insured by this policy (explained in #7);

and

B) you are sued and the court decides that the accident was your fault. (Of course, if the court decides that you were not at fault, neither you nor Vista would have to pay for injuries or property damages of the other party.)

The Commonwealth of Pennsylvania requires all car owners to carry no-fault insurance (explained in Part II). Therefore, if you are involved in an accident with another Pennsylvania car owner, it is possible that the accident will not result in a lawsuit. In that case, your costs for bodily injuries and property damages will be covered by your insurance (under Parts II and IV). The other party's costs will be covered by his or her insurance.

3. How much will be paid under Limits of Liability for injuries and damages?

The maximum amounts that Vista will pay for bodily injuries and property damages occurring in one accident are called the Limits of Liability. These are the amounts of coverage that you purchase with your premium (the amount of money you pay Vista each year). You have purchased Limits of Liability of $ 100,000 for bodily injuries and $ 50,000 for property damages.

If more than one person is hurt in the same accident, Vista will pay only a combined total of $ 100,000 for bodily injuries. If more than one car or other property is damaged in the same accident, Vista will pay only a combined total of $ 50,000 for property damages. Of course, one accident may result in both bodily injuries and property damages, and Vista will pay up to the maximum for each.

Example

Suppose that you were involved in an accident which the court decides was your fault. You had purchased Limits of Liability of $100,000 for bodily injuries and $50,000 for property damages. Two people in the other car were hurt. The court awarded the driver of the other car $60,000 for bodily injuries and $6,000 for damages to his car and its contents. His passenger was awarded $50,000 for bodily injuries. Vista will pay to the other party:

Bodily injuries:	
Driver of other car	$60,000
Passenger in other car	$40,000 (you would have to pay the other $10,000)
Property damages:	
Other car	$6,000

You may purchase higher Limits of Liability at any time. But, of course, if you are in an accident, the Limits of Liability which will apply are those you had purchased prior to the accident.

4. Is there a time limit on payments?

If an accident occurs during the effective dates of this policy, it will be covered during the entire period that a lawsuit may be legally brought against you, whether or not this policy has been cancelled in the meantime.

5. What rights does Vista have?

Vista may make investigations and settle any claim or lawsuit as it wishes. This means that for any accident covered by this policy Vista may gather information about the accident, and it may settle in or out of court for any amount it wishes without your permission (up to the remaining amount of your Limits of Liability). Vista will select the lawyer and pay the lawyer's fees.

6. How much will be paid under Supplementary Payments for expenses?

Vista agrees to pay expenses due to lawsuits, your expenses to attend hearings or trials, and expenses due to your arrest. The amounts that will be paid for each type of expense are explained below. Payments for these expenses are called Supplementary Payments because they are in addition to the Limits of Liability. Remember that Limits of Liability and Supplementary Payments are two different things. However, once the Limits of Liability have been paid in full, Vista will not make any more Supplementary Payments to cover lawsuits.

A. Expenses due to lawsuits

As long as your Limits of Liability for bodily injuries and property damages have not been used up, Vista will make Supplementary Payments to pay in full all expenses connected with lawsuits resulting from an accident covered by this policy. The expenses which will be paid are:

- lawyer fees;
- court costs;
- interest on money which Vista has promised to pay the other party, but has not paid yet;
- premiums on bonds which must be bought if Vista decides to appeal a court decision;
- premiums on any other bonds required due to a lawsuit.

Vista will pay all of the above expenses incurred by:

- Vista;
- you;
- the other party, if the court finds you at fault and orders you to pay the other party's expenses for the lawsuit.

It will sometimes happen that although the Limits of Liability (bodily injuries and property damages) have not been reached prior to the start of a lawsuit, the settlement of that lawsuit will go over the remaining balance. In that case Vista will make Supplementary Payments to cover all of the expenses of that lawsuit (lawyer fees, etc.), but it will pay for bodily injuries and property damages only the amount remaining in the Limits of Liability. After that, because the Limits of Liability have been used up, Vista will not make any more payments under either Limits of Liability or Supplementary Payments. (However, a new accident would be covered under both types of payments.)

Example

Suppose that you were in an accident which the court decides was your fault. You had purchased Limits of Liability of $100,000 for bodily injuries and $50,000 for property damages. Three people who were in the other car sue you in separate lawsuits and are awarded the amounts shown below.

LIMITS OF LIABILITY:

	BODILY INJURIES			PROPERTY DAMAGES		
	Total	Paid by Vista	Paid by you	Total	Paid by Vista	Paid by You
1st party	60,000	60,000	0	6,000	6,000	0
2nd party	50,000	40,000	10,000	0		
3rd party	20,000	0	20,000	0		

SUPPLEMENTARY PAYMENTS:

	EXPENSES OF LAWSUIT		
	Total	Paid by Vista	Paid by you
1st party	2,000	2,000	0
2nd party	1,000	1,000	0
3rd party	1,000	0	1,000

B. Expenses to attend hearings or trials

If Vista requests that you attend hearings or trials, Vista will pay you for reasonable expenses, not to exceed $50 per day. This includes the loss of wages or salary. It does not include the loss of other income such as tips or commissions.

> Example
>
> Suppose that Vista requested you to be present at a trial for two days. You ordinarily earn $60 a day, but you were not paid while you attended the trial. Therefore you lost $120 in earnings. You spent $3 on gas to travel to the trial and $3 on lunch each day, an additional expense of $12 ($6 x 2 days). Your total expenses would be $120 + $12 = $132. Vista would pay you a maximum of $50 a day x 2 days = $100. The remaining $32 would come out of your pocket.
>
> If your expenses had been less than $50 a day, Vista would pay the actual amount. For example, if you lost wages of $40 a day and spent $6 a day on gas and meals, your total expenses would be $92 ($46 x 2 days). Vista would pay the full $92.

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C. Expenses due to your arrest

If you are arrested for a traffic violation which involves a car insured under this policy, Vista will pay the following expenses:

- In connection with an accident. If your arrest is in connection with an accident, Vista will pay for:

  1) bail bond (your actual cost, as long as it doesn't exceed $500)

  and

  2) lawyer fees (your actual cost, as long as it doesn't exceed $50).

  If your bail bond costs more than $500 or your lawyer fees more than $50, you must pay the balance. If it costs less, Vista will pay only the actual cost.

  Each of these items is considered separately. Therefore, if your bail bond is less than $500, you cannot apply any of the balance toward the lawyer fees (or vice versa).

  Do not confuse these lawyer fees with those discussed in Paragraph A. These lawyer fees are for handling any charges the police bring against you as a result of an accident. The lawyer fees in Paragraph A are to handle lawsuits brought against you by the other party for bodily injuries and property damages.

- Not in connection with an accident. If your arrest is not in connection with an accident, Vista will pay for a bail bond only (your actual cost, as long as it doesn't exceed $500). An example of this situation is arrest for drunken driving, even though no accident has occurred.

Although Vista will pay for bail bonds, it is not obligated to apply for or furnish them. You must make these arrangements yourself.

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Following is an example which shows all of the types of payments under Liability Insurance.

Example

Suppose that you were involved in an accident which the court decides was your fault. You had purchased Limits of Liability of $100,000 for bodily injuries and $50,000 for property damages.

Three people in the other car were hurt. The driver of the other car was awarded $60,000 for bodily injuries, $6,000 for damages to his car and its contents, and $5,000 for his lawyer fees. The fees for the lawyer hired by Vista and other expenses incurred by Vista were $2,000. Your expenses to attend the trial (lost wages, etc.) for 10 days were $40 a day. At the time of the accident you had been arrested for reckless driving. Your bail bond cost $200 and your lawyer fee cost $175. Vista would pay:

Limits of Liability:		
bodily injuries	$60,000	
property damages	$ 6,000	
Supplementary Payments:		
expenses of the lawsuit	$ 7,000	(5,000 + 2,000)
expenses to attend trial	$ 400	(40 x 10)
expenses due to arrest	$ 250	(200 + 50; you would have to pay $125)

Then one of the passengers in the other car sued you and was awarded $50,000 for bodily injuries and $3,000 for his lawyer fees. The fee for the lawyer hired by Vista and other expenses incurred by Vista were $1,000. Your expenses to attend the trial for 5 days were $60 a day this time. Vista would pay:

Limits of Liability:		
bodily injuries	$40,000	(you would have to pay $10,000)
Supplementary Payments:		
expenses of the lawsuit	4,000	(3,000 + 1,000)
expenses to attend trial	250	(50 max. x 5; you would lose $10 a day)

At that point, the Limit of Liablity for bodily injuries would be used up. The Limit of Liability for property damages would have $44,000 left ($50,000 - 6,000). If the third person in the other car sued you, Vista would not make any more payments for either bodily injuries or the expenses of the lawsuit.

Damages to your own car and injuries to you and occupants of your car would be paid by Vista, under Parts II and IV of this policy.

[The rest of the policy is not included in this experiment.]